THE DREADED….

Sand Resource Management: Issues and Perspectives

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Why muck around in the sand?

Early fall, 2014

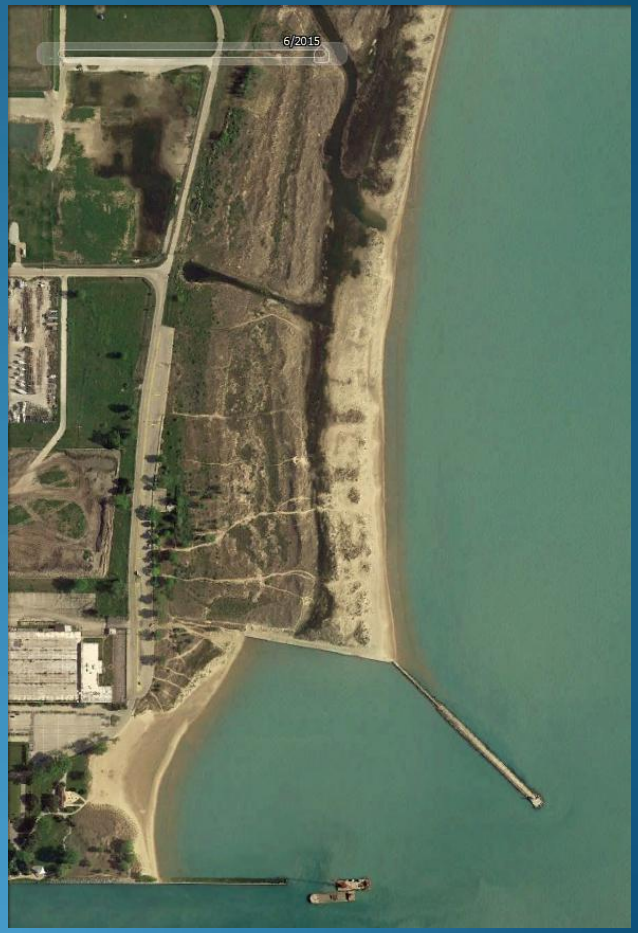
October 30, 2014

October 31, 2014

Waukegan Harbor

1993

1999



2014

The Problem

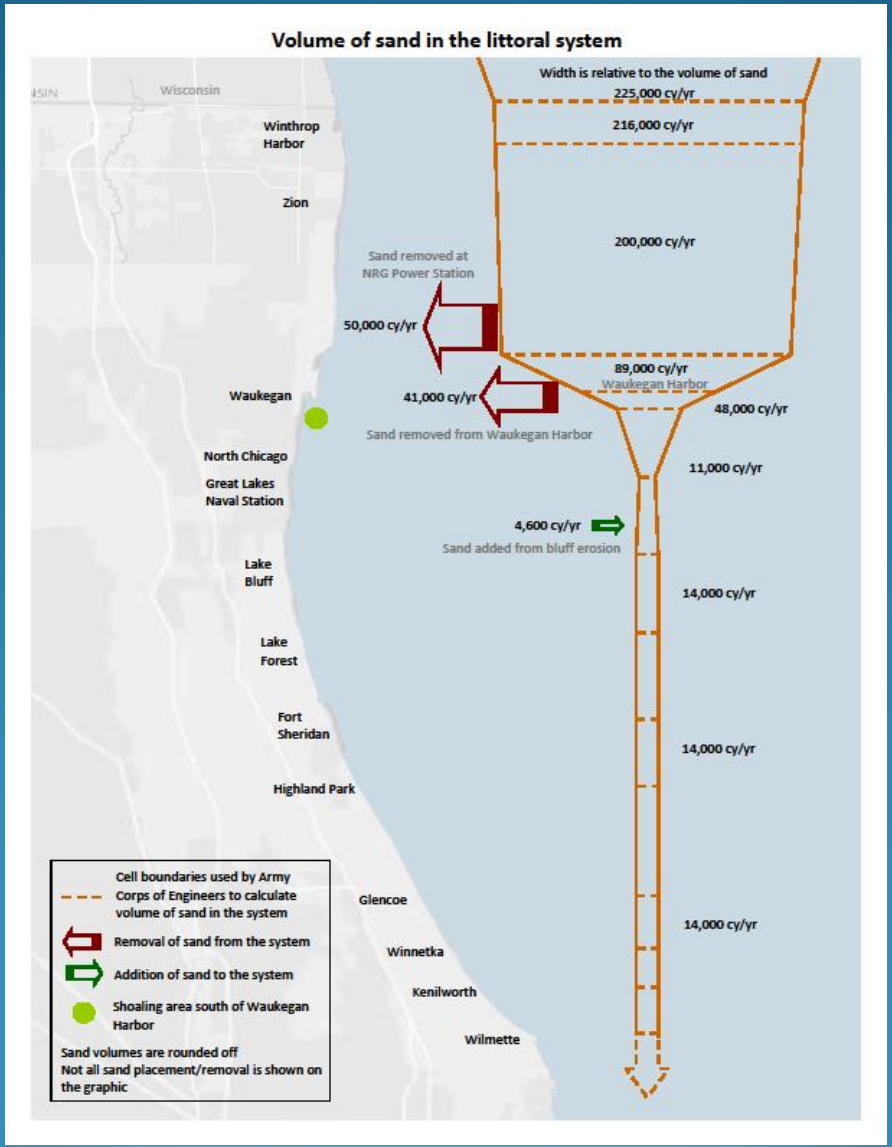
Illinois' North Shore coastal communities manage the issues of coastal erosion and excess sand deposition (accretion) individually, though they are all part of a regional system.

- Consequences:
  - Sand clogged harbor entrances- economic impacts
  - Unhealthy beaches
  - Infrastructure threatened by lakebed downcutting
  - Underutilized recreational harbors
  - Costly dredging and disposal of sand and sediment
  - Costly beach renourishment preventing adequate placement
- Local remedies for issues impact neighboring communities.
- Current solutions are costly and at cross-purposes.

Project Goal (Long Term)

- To develop a sustainable, cost-effective, regional sand management system or set of strategies to ensure the health, safety and many uses of our coast and shoreline.

Sediment Budget: IL North Shore



Shared Principles: a guide for management practices

- Broad and fair access to shoreline recreation activities for all communities is a priority.
- Sand is an important natural resource that impacts our economy, environment and public health and safety – shoreline management practices should reflect that importance.
- Local and regional economic development is strongly connected to shoreline-management practices that protect the public health and safety, and environmental assets in our communities.
- Our shoreline is home to unique assets that can increase tourism and improve the quality of life of our residents.
- Shoreline management practices implemented at one site should not cause adverse impacts to other sites.

Asset	Management Goals (for the Assets)	Management Challenges (for the Assets)												Impacts (to the Assets) - *could be due to current management actions happening along the coast, or lack of action*
		Policies/ Regulations	Communication	Sand migration/ Too Little Sand	Sand Quality/ Contamination	Loss of Littoral Drift	Lake bottom erosion	Access and Safety	Dredging	Unstable/ Outdated Structures	Excess Sand	Funding	Ownership	
Illinois Beach State Park														Habitat depletion; Beaches are eroding; Beach nourishment is expensive
Waukegan Harbor														Dredging harbor is expensive; Sand reuse is difficult due to policies; Decreased shipping = less congressional money available for harbor dredging
Beaches														Beaches eroding; Trucking in sand to nourish beaches; Unsafe swimming conditions; Decrease in tourism/economy
Harbors/ Marinas														Disrupt recreational and economic activities (fishing, boating); Require dredging
Nature Preserves, INAI sites, Parks/Open Space														Habitat los and depletion; Dune instability interfere with ecosystem services (water, native habitats)
Industry Sites (nuclear waste, Superfund, etc.)														Prevent land from being developed (commercial, residential, restored open spaces, etc.); Contaminated runoff and sediment
Water Intake Structures														Potential threat to water quality (public health and safety issue)

Strategies and Options

1. **Review example strategies**
    1. Engineering or action strategies
    2. Administrative or support strategies (funding, partnerships)
2. **Discuss strategies**
    - Assets where the strategy could be applied
    - Pros/cons
    - Priority strategies
    - Needs to pursue strategies
    - Next steps

Nourishment

Within the North Shore system - physically moving sand / re-locating / re-distributing sand - using trucking, barges, etc.

From outside the system – physically bringing in sand from somewhere outside of the Northshore system

Adds sand to the beach
Supports a natural littoral cell system

Subject to storms & weather
Requires ongoing management

Engineering – Offshore Reef

Artificial reefs are structures parallel to the shoreline but submerged away from the beach.

Wave energy is disrupted by the "bump" in the lake bed and crest before they reach the beach. This reduces erosion due to waves and some storm events, but not wind.

Reduces area's participation in littoral system
Retains most sand but does not add any sand

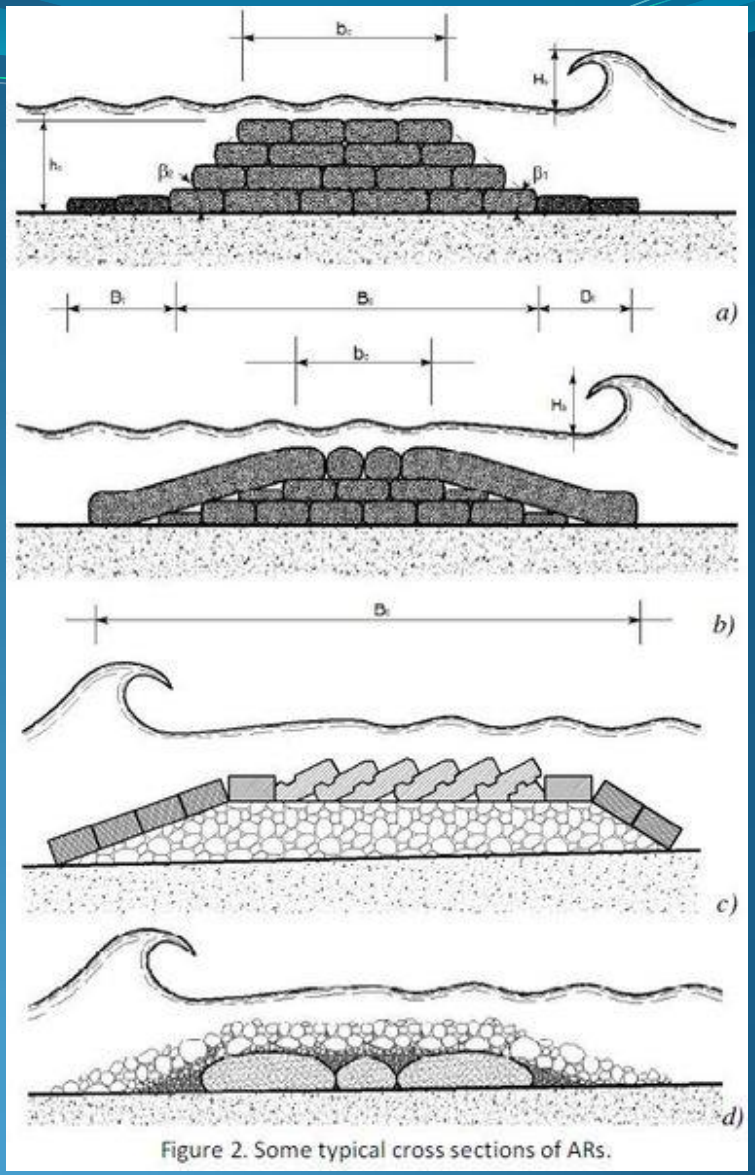


Figure 2. Some typical cross sections of ARs.

Potential swimming hazard
Beach may still require nourishment

Natural Engineering – Living Shoreline

Living Shorelines embrace natural ecosystems from under the water to the dune high above. Living Shorelines stabilize sand across the system using vegetation appropriate for each habitat.

A comprehensive approach that can include dune, wetland, and living offshore reef restoration.

Reduces erosion from storms, waves, wind
Does not add sand to the beach, but retains

Does not add sand to the beach
Can become self-sustaining over time

Regional Cooperation & Management

Formal Cooperation & Management includes legally binding agreements among two or more municipalities to collaborate on sand management through funding and implementing solutions to benefit all communities involved.

Informal Cooperation & Management includes non legally binding agreements among neighboring municipalities to collaborate together to address sand management across their geography without mutually funding projects.

Could coordinate dredging and nourishment across municipalities
Could fund large scale solutions

Could collaborate on regional plans
Could collectively advocate for regional solutions or funding

Working group needs

- Understanding the Problem
  - Data, information sharing, modeling, research
- Understanding the challenges and barriers
  - Permitting processes, regulatory requirements, funding, policies, regulatory mindset, statutory requirements that may or may not make sense and be appropriate.
- Understanding the options and strategies
  - Successful models, partnership opportunities, coordinated actions, legislative/policy changes

Next Steps

- Develop report on results of Sand Management Working Group (SMWG)
- Research models of regional sand management
- Research strategies of sustainable funding

- Agency Working Group on Sand Management
  - Address questions and requests from SMWG
  - Determine real and perceived challenges with permitting and regulation

- Data and information needs
  - Coastal Resilience Grant (or section 309 funding)
  - Coordination with NOAA for data, tools, modeling

Moving toward a coherent sand resource management strategy in the Great Lakes.

What are the most significant barriers to implementing a sustainable sand management strategy?

What are the common issues among the coastal programs in addressing sand management?

What topics or issues associated with implementing a regional strategy need additional research, investigation (e.g. differing state water quality rules, funding strategies, etc)?

What can our coastal programs do **now** to improve our ability to manage sand resources?